

Machine Vision in the UK

Don Braggins Presents the UK Vision Scene



The UK Industrial Vision Association (UKIVA) was established in 1992 as a not-for profit trade organization whose prime objective was to promote the use of imaging in industry. Over the years it has expanded its remit a number of times to reflect the dynamics of the imaging world and changes in use of vision in the UK and now includes applications of imaging in science. Members include vision component suppliers, 'full system' suppliers, or system integrators, consultancy services and academic research groups.

Advances in processing, camera and lighting technology have revolutionized the vision industry and newer techniques such as infrared, X-ray, high-speed and 3D imaging are all important parts of vision in the UK. Back in 1992 most vision components were manufactured in North America but now there are many European manufacturers. All of the leading manufacturers of vision components are represented in the UK, either through wholly owned subsidiaries or through well-established specialist distributors. Although availability of vision components is well catered for in the UK, there are other areas of the industry that could be improved.

Demand for System Integrators

UKIVA members say that adoption of machine vision in the UK could be acceler-

ated further if there were more suitably experienced system integrators who can provide a 'turnkey' solution for manufacturers. Academia plays an important role

The UKIVA

One of the key achievements of the UKIVA has been in establishing itself as a renowned knowledge centre for matters related to industrial imaging. The UKIVA web site (www.ukiva.org) has been designed to be a machine vision information hub. It is the first port of call for many who are seeking to introduce a vision system.

The Association also offers free advice via phone (+44 1763 261419) or e-mail (info@ukiva.org) to anyone seeking help in specifying or sourcing vision systems or components.

both in research activities that can lead to new product development and in developing new generations of 'vision literate' graduates to capitalize on the benefits offered by vision. Unfortunately the UK university system is focused on building skills to develop machine vision algorithms, whereas industry needs engineers who understand how to apply machine vision tools to build systems. However, other sources of funding, notably from the UK government's former Department of Trade and Industry (DTI) (now BERR) technology programs and the European Union allow many universities (including UKIVA research members) to carry out a mixture of pure and applied research as well as being involved in consultancy projects with machine vision partners, even leading to the formation of industry-specific spin-off companies.

Knowledge Transfer Networks

Another important change in recent years has been the formation by the DTI of a number of Knowledge Transfer Networks (www.berr.gov.uk/dius/innovation/technologystrategyboard/tsb/technology-programme/KTN/page12567.html), aimed at getting the knowledge that our univer-

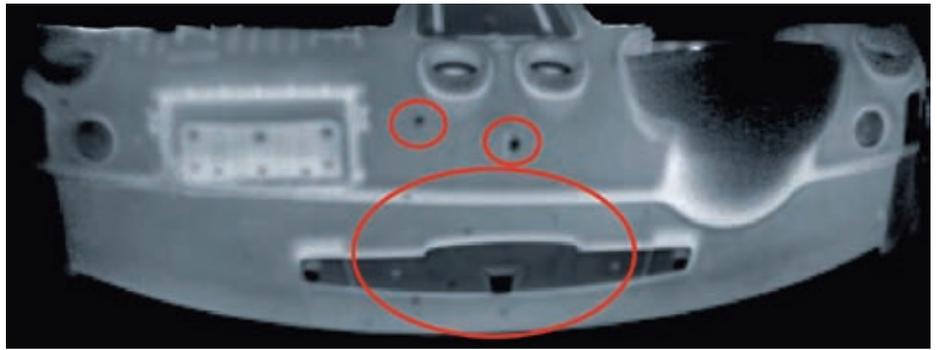
sities and research centers have into industry. Although there is no specific 'Imaging' KTN, imaging falls into the broader remit of the Photonics KTN. It seems that in the UK, the vision industry itself may have to become the driving force to maintain and further develop the interface with universities.

The UK vision industry survived the 1992 recession better than, for instance, its French counterparts, but there are already a few signs (such as reducing or not taking exhibition space) that the industry is adopting a cautious approach. The UK vision industry includes relatively few manufacturing suppliers to industries such as semiconductors, electronics, and steel which have historically suffered the steepest downturns during recessions, and informal discussions amongst UKIVA members suggest that where vision can reduce labour costs a recession may actually be a good time to persuade users to invest in vision (provided, of course, that they can obtain investment funding).

Application Trends

Inspection remains the biggest single application for vision in the UK, ranging from checking for defects on a production line, to being linked directly into the production process to provide statistical data from the measurements being made. Statistical process control methods are used to improve product quality, reduce wastage, improve productivity and streamline the process. In so doing, profitability will be maximized.

Other important application areas are product traceability and robot vision.



IR image showing cavities in foam dashboards

(Courtesy FLIR Systems)

Tracking a component and all the processes it has gone through, from manufacturing, assembly right through to end-user requirements for spare parts replacement (from the cradle to the grave) is becoming an essential requirement as ERP, MRP and quality assurance systems become more widespread throughout the manufacturing supply chain.

The 2D Datamatrix code is an increasingly popular method of product marking. Industrial vision systems are used to verify these 2D codes with the highest degree of accuracy and reliability and often at high line speeds.

Robot vision applications fall typically into two application areas: robot vision, where the robot presents the product or component to the vision system for inspection, or robot guidance, where vision systems give the robot the ability to "see". This allows visual inspection of the robot working area as well as guidance based on the detected position of a product or component. Of course it is also possible to combine the two so that vision is used to pick the product for further inspection.

By linking robotics and vision into automatic procedures, additional flexibility is introduced into production lines to enable different types of products to be handled on the same line.

In the UK, vision is used extensively in a variety of industries, including automotive, food and beverage, packaging and pharmaceutical.

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